Attorney's Docket No. 033339/271282 PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No.:	10/706,696	Confirmation No.: 8604
Appellant(s):	Varin et al.	
Filed:	11/12/2003	
Art Unit:	3682	
Examiner:	Marcus Charles	
Title:	A RIBBED POWER-TRANSMISSION BELT	

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REPLY BRIEF UNDER 37 CFR § 41.41

This Reply Brief is filed pursuant to 37 CFR § 41.41 and is filed in response to the Examiner's Answer of March 3, 2009. These comments are an extension of, and in addition to, the arguments presented in the Appeal Brief filed on December 1, 2008.

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1. Status of Claims.

Claims 1-17 are pending in the application and all stand rejected as unpatentable over a combination of prior art references as set forth in greater detail below. All rejections of record are appealed herein. Accordingly, Claims 1-17, which were finally rejected in the Office Action of April 3, 2007, are the subject of this appeal.

2. Grounds of Rejection to be Reviewed on Appeal.

As stated in the Final Rejection dated April 3, 2008, claims 1-12 and 15-17 are rejected as being unpatentable over US Patent No. 4,981,462 to White et al. (hereinafter "White") in view of US Patent No. 4,904,232 to Kitahama et al. (hereinafter "Kitahama"). Claims 13 and 14 are rejected as being unpatentable over these same references, further in view of US Patent No. 4,011,766 to Waugh (hereinafter "Waugh"). These are the only rejections in this appeal.

As explained more fully below, Appellants submit that the claims as grouped in the final rejection do not stand or fall together. There are several independent reasons why the claims are patentable over the cited prior art. Thus, Appellants have grouped the grounds of rejection as follows:

1) The rejection of claims 1, 4-5, and 11-12 under 35 U.S.C. §103(a) as being obvious over White in view of Kitahama;

2) The rejection of claims 2-3 under 35 U.S.C. §103(a) as being obvious over White in view of Kitahama;

3) The rejection of claim 15 under 35 U.S.C. §103(a) as being obvious over White in view of Kitahama;

4) The rejection of claims 6-7 and 16 under 35 U.S.C. §103(a) as being obvious over White in view of Kitahama;

5) The rejection of claims 8-10 and 17 under 35 U.S.C. §103(a) as being obvious over White in view of Kitahama;

6) The rejection of claims 13 and 14 under 35 U.S.C. §103(a) as being obvious over White and Kitahama, and further in view of Waugh.

3. Argument

In the obviousness rejection, the Examiner asserts that White discloses a transmission belt comprising V-ribs made from a single material, wherein the V-ribs have flat side faces and round ridges. However, the Examiner acknowledges that White fails to disclose the claimed ridge radius. See the final Office Action dated April 3, 2008, page 2. In an attempt to cure the deficiency of White, the Examiner cites Kitahama for teaching ribs that include circular tips/ridges having a radius from 0.5 to 1.1 mm. The Examiner concludes that it would have been obvious to a skilled artisan to "modify the belt of White et al. so that the rib tip has a convex curvilinear radius, the height of the rib and the length of the flat side that fall within the ranges as disclosed by Kitahama et al. in order to increase the lifetime ratio of the belt." *Id.* at page 3.

Appellants submit that the Office has not proven a *prima facie* case of obviousness because neither the references cited nor the knowledge generally available in the art provides any suggestion to modify or combine the prior art in the manner suggested by the Examiner. In fact, Kitahama actually teaches away from belts such as those taught by White having teeth consisting of a single elastomeric material. In view of at least Kitahama's teaching away, one skilled in the art has no rational basis for modifying the belt of White with the teachings of Kitahama.

Secondly, the purported combination of references is not predictable in the fashion put forth by the Examiner and as required by KSR. In this regard, it would not be predictable to apply the tip/ridge dimensions of Kitahama to the single elastomeric ribs of White since the geometry of the rib tips disclosed in Kitahama is a function of utilizing ribs comprising two different materials having different degrees of hardness. Indeed, in KSR in the context of the importance of predictability with respect to propriety of a combination of references, the Supreme Court extensively discusses U.S. v. Adams, 383 U.S. 39 (1966). **In U.S. v. Adams, the Supreme Court found the claims not to be obvious even though the claims were drawn to a structure already known in the art that was altered by the substitution of one known element with another with predictable results since the prior art taught away from combining certain ones of the known elements. *Id.* at 50-52**. Moreover, as a matter of practice, MPEP § 2143 describes a number of different rationales for obviousness and requires an Examiner to articulate a number of findings to support an obviousness rejection including, in

most instances, a finding that the proposed modification or combination would have been predictable to one of ordinary skill in the art. Consistent with the guidance provided by KSR, MPEP § 2143 also repeatedly notes that obviousness cannot be established under a respective rationale in instances in which an Examiner fails to properly establish any one of the requisite findings, **such as in the present application in which the combination of White and Kitahama does not provide predictable results or render any of the claims obvious in light of Kitahama's express teaching away**.

1) Claims 1, 4-5, and 11-12 are not obvious over the combination of White and Kitahama

Claims 1, 4-5, and 11-12 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 4,981,462 to White et al. (hereinafter "White") in view of U.S. Patent No. 4,904,232 to Kitahama et al. (hereinafter "Kitahama).

White teaches an endless power transmission belt construction having opposed side edges and having an inner surface of a single elastomeric material defining a plurality of longitudinally disposed and alternately spaced apart like projections and grooves for meshing with an outer peripheral ribbed surface of a rotatable pulley; wherein each projection of the belt construction has a generally V-shaped transverse cross-sectional configuration defined by two substantially straight side edges that converge from the respective apexes of the grooves of the belt construction that are on opposite sides of that projection to an apex of that projection.

White teaches that the side edges of each projection of the belt construction define an angle of approximately 60 degrees therebetween with the thickness of the belt construction being substantially the same as the thickness of a similar belt construction wherein the angle is approximately 40 degrees. In particular, White teaches that the angle between the side edges of each V-rib should be approximately 60 degrees while maintaining the same thickness as prior art belt constructions having an included angle of 40 degrees to reduce belt noise. White teaches that the accumulation of material between the ribs will reduce tension decay of the belt construction. See column 1, line 67 through column 2, line 7.

Unlike White, **Kitahama discloses that belts having compression sections comprising a single material, such as those taught by White, form cracks extending outwardly from the distal end of the ribs. Thus, Kitahama teaches that belts having compression sections comprising a single material exhibit undesirable properties.** Kitahama overcomes this undesirable characteristic by utilizing a ribbed belt including inner and outer compression portions made from different rubber materials. Specifically, Kitahama teaches that "[i]t is preferred that the difference between the hardness of the two portions 16 and 17 be at least 5° Shore A." See column 3, lines 35-37. As illustrated in Figure 1, the belts taught by Kitahama require ribs 15 including an inner portion 17 and an outer portion 16. As can be seen in Figure 1, the inner portion 17 of the ribs is the surface closest to or adjacent a sheave or pulley and the outer portion 16 of the ribs is surface of the rib adjacent the flat section of the belt.

The Examiner argues that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the belt of White et al. so that the geometrical features of the belt fall within the ranges disclosed by Kitahama. See Examiner's Answer pages 3, last paragraph, through page 4, first paragraph. Despite acknowledging on page 6 of the Examiner's Amendment that obviousness can only be established where there is some teaching, suggestion, or motivation to combine or modify prior art, the Examiner asserts the conclusory statement that it would have been a matter of obvious design choice based on the size of the belt and pulley to construct a belt according the currently claimed invention. The Examiner, attempts to support the conclusory finding by stating that "in this case, one of ordinary skill in the art **would be able to modify** the ridges… so as to include the claimed dimensions for increasing the lifetime ratios and to increase friction." See Examiner's Answer page 6, last paragraph. Appellants assume that the proposed motivation for making such a modification for the purpose of increasing the lifetime ratio allegedly comes from Kitahama, however, the Examiner has not made this point clear.

First, the mere fact that references can be combined or modified does not render the resultant combination obvious unless the results would have been predictable to one of ordinary skill in the art. *KSR International Co. v. Teleflex Inc.*, 550 U.S. ___, ___, 82 USPQ2d 1385, 1396 (2007). See MPEP § 2143.01. As such the mere fact that the belts of White could be modified

fails to provide a rational basis for making such a modification, especially in light of Kitahama's teaching away from constructing belts having a compression section comprising a single material.

With regards to the Examiner's proposition that one skilled in the art would modify the belts of White by employing the dimensions of Kitahama to increase the lifetime ratio is misplaced. **More specifically, Kitahama actually teaches that the lifetime ratio is increased by utilizing a compression section comprising an outer compression section and an inner compression section wherein the inner compression section is made of a softer material than that of the outer compression section exhibit a substantially greater useful life**. See Column 4, lines 39-53. Specifically, Figure 9 illustrates that belts having the distal end of the ribs formed of a softer rubber than that of the outer portion (i.e., belts according to Figure 8) outperform belts having ribs formed of a single material (i.e., belts according to Figure 7). See column 4, lines 32-49. Figures 7-9 are provided immediately below for ease of reference.

FIG. 7

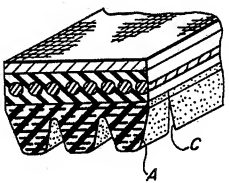


FIG. 8

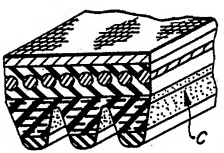
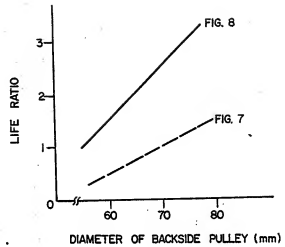


FIG. 9



As shown in Figure 9, Kitahama explicitly teaches that the lifetime ratio of a belt having ribs with two different materials is significantly greater than belts having ribs constructed from a single material (e.g., the belts taught by White).

As discussed above and illustrated by Figure 9, Kitahama actually teaches that the lifetime ratio is increased by modifying the compression section of belts according to White by utilizing two different materials wherein the inner compression section is made of a softer material than that of the outer compression. At no point does Kitahama teach or suggest that the lifetime ratio of belts according to White can be increased only by modifying the ridge geometry, much less by employing the currently claimed range. As such, the Examiner's proposition that one skilled in would modify the belts of White by employing the dimensions of Kitahama to increase the lifetime ratio is misplaced. To the contrary, one skilled in the art would be motivated to modify the compression section to include two separate materials as discussed above.

Appellants note that the specific geometrical dimensions taught by Kitahama and relied upon by the Examiner are clearly taught as being a function of utilizing two different materials of construction for the compression section. That is, Kitihama does not teach or suggest the tip geometry of the multi-component compression sections can be applied to belts having a compression section comprising a single material (e.g., belts according to White). For instance,

Kitahama teaches that the tip geometry of belts having a compression section having two different materials can be further improved by constructing the inner portion 17 of the compression section (i.e. the softer material) to have circular side surfaces. As such, Kitahama explicitly teaches that the improved wear property exhibited by belts having a compression section of two different materials is made possible due to the softer material (i.e., the tip material is softer than the body of the rib) used for constructing the inner portion 17 of the compression section. Further, the use of a softer material for the tip construction enables the circular side surface geometry.

Furthermore, the purpose of the curvature of the inner portion 17 of the ribs in Kitahama is to avoid contact with the pulley to minimize wear. See column 1, lines 25-32. Thus, it is clear that Kitahama teaches a means to avoid cracks in the ribs of a belt when reversely bent in a drive system, only when the ribs are made of two different materials. Accordingly, Kitahama acknowledges the fact that he cannot provide a solution with a rib made of a single rubber material. Accordingly, Kitihama does not teach or suggest the tip geometry of the multi-component compression sections can be applied to belts having a compression section comprising a single material (e.g., belts according to White).

Additionally, as noted above, Kitahama discloses that belts having compression sections comprising a single material, such as those taught by White, form cracks extending outwardly from the distal end of the ribs. Thus, Kitahama teaches that belts having compression sections comprising a single material exhibit undesirable properties. Specifically, Kitahama teaches that "[i]t is preferred that the difference between the hardness of the two portions 16 and 17 be at least 5° Shore A." See column 3, lines 35-37. As illustrated in Figure 1, the belts taught by Kitahama require ribs 15 including an inner portion 17 and an outer portion 16. As can be seen in Figure 1, the inner portion 17 of the ribs is the surface closest to or adjacent a sheave or pulley and the outer portion 16 of the ribs is surface of the rib adjacent the flat section of the belt.

The Examiner proposes combining White and Kitahama, in the manner such that a resulting belt would have a compression section formed of a single elastomeric material. **However, to combine White and Kitahama in the manner suggested by the Examiner requires blatant disregard for the teachings of Kitahama.** Upon reading Kitahama the skilled

artisan would clearly not be motivated to retain the single elastomeric material rib construction of White, much less while also only selecting the tip geometry of Kitahama to form a ribbed belt. As discussed previously, Kitahama provides an overwhelmingly convincing showing that single material ribbed belts such as White are significantly inferior. One skilled in the art would clearly not be motivated to retain an inferior design aspect (i.e. ribs formed from a single material) when presented with a superior alternative (i.e. ribs formed from two different materials). **Contrary to the Examiner's mischaracterization that Appellants' "teaching away" arguments are premised solely on the fact that Kitihama teaches belts having a compression section of two different materials and White teaches belts of a single material compression section, Kitahama undoubtedly teaches away from White by teaching that belts having compression sections comprising a single material, such as those taught by White, undesirably form cracks extending outwardly from the distal end of the ribs and that this undesirable characteristic can be overcome by utilizing a compression section having two different materials.**

After reading Kitahama, one skilled in the art would be incited to steer away from using only one material of construction for the compression section of belts. As discussed on column 6, lines 7-11, Kitahama's geometrical change of the ribs makes sense only if a softer rubber in the inner portion 17 of the ribs is utilized. As such, the teaching of Kitahama cannot be applied to a belt where the ribs are made of a single elastomeric material. Such combination or modification of White lacks a rational basis or expectation of success in light of Kitahama's express teachings. Additionally, the combination/modification proposed by the Examiner also is not predictable as required by KSR. As referenced above, it would not be predictable to combine the tip/ridge dimensions of Kitahama with the single elastomeric ribs of White since the geometry of the rib tips disclosed in Kitahama is taught to be a function of utilizing ribs comprising two different materials having different degrees of hardness. Even if the combination of Kitahama's tip geometry with the belts of White provides predictable results, the Supreme Court has dictated that claims are not obvious even if a combination were to provide predictable results in circumstances where the prior art teaches away from such a combination. See U.S. v. Adams, 383 U.S. 39 (1966). As discussed above, Kitahama teaches away from such

a combination, and White in view of Kitahama fails to provide a *prima facie* case of obviousness that is necessary for a proper rejection of any of the pending claims.

2) Claims 2-3 are not obvious over the combination of White and Kitahama

Claims 2-3 stand rejected under 35 U.S.C. §103(a) as being unpatentable over White in view of Kitahama.

Claim 2 recites a belt including rounded ridges having a range of curvature from 1.05 to 1.45 mm. Claim 3 recites a belt including rounded ridges having a range of curvature from 1.1 to 1.3 mm.

See arguments presented in Appellants' Appeal Brief.

3) Claim 15 is not obvious over the combination of White and Kitahama

Claim 15 stands rejected under 35 U.S.C. §103(a) as being unpatentable over White in view of Kitahama.

Claim 15 recites a belt including rounded ridges having a range of curvature from 1.15 to 1.25 mm.

See arguments presented in Appellants' Appeal Brief.

4) Claims 6-7 and 16 is not obvious over the combination of White and Kitahama

Claims 6-7 and 16 are dependent upon claim 1 and recite the length (ℓ) ranges from 0.8 to 1.7 mm (claim 6), 1 to 1.5 mm (claim 7), from 1.08 to 1.36 mm (claim 16).

See arguments presented in Appellants' Appeal Brief.

5) Claims 8-10 and 17 is not obvious over the combination of White and Kitahama

Claims 8-10 are dependent upon independent claim1. The claims recite that the height of the ribs (H) ranges from 1.8 mm to 2.4 mm (claim 8), 1.9 mm to 2.3 mm (claim 9), and H is 2.2 mm (claim 10). Claim 10 also recites that the length (ℓ) of the flat side faces are substantially equal to 1.35 mm. Claim 17 recites that H ranges form 2 to 2.2 mm.

See arguments presented in Appellants' Appeal Brief.

6) Claims 13-14 are not obvious over the combination of White, Kitahama, and Waugh

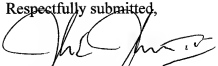
Claims 13-14 are dependent upon independent claim 1 and therefore each dependent claim also recites a power transmission belt for a motor vehicle and presenting V-ribs made of a single elastomer material and having flat side faces and rounded ridges, wherein said ridges present a convex curvilinear profile having a mean radius of curvature greater than 1 mm and less than or equal to 1.5 mm.

See arguments presented in Appellants' Appeal Brief.

CONCLUSION

In light of at least the foregoing reasons, as well as those presented in Appellants' Appeal Brief, Appellants respectfully submit that the claims of record are patentable over the cited references. As a result, it is respectfully requested that the Board of Patent Appeals and Interferences reverse the final rejection of the pending claims.

Respectfully submitted,



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